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EXAMINER

FIDLER, SHELBY LEE

ART UNIT

PAPER NUMBER

2861

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Please find below and/or attached an Office communication concerning this application or proceeding.

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|                              |                                      |                                  |  |
|------------------------------|--------------------------------------|----------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/730,179 | <b>Applicant(s)</b><br>SU ET AL. |  |
|                              | <b>Examiner</b><br>Shelby Fidler     | <b>Art Unit</b><br>2861          |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 January 2006.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-9,12-17 is/are rejected.
- 7) ☒ Claim(s) 2,3,10 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Objections*

Claims 1, 5, and 13 are objected as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. These claims recite "... a plurality of electrodes, disposed in one of channels of the inkjet cartridge respectively. ...". It is unclear whether there are a plurality of electrodes, one electrode in each channel, or if there is a plurality of electrodes in each respective channel. For the purpose of the following rejections, the examiner assumes that there is one electrode in each channel. Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 5, and 13 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. Evidence that claims 1, 5 and 13 fail(s) to correspond in scope with that which applicant(s) regard as the invention can be found in the reply filed 1/26/2006. In that paper, applicant has stated "the plurality of electrodes are disposed in one of the channels" (page 6, line 2), and this statement indicates that the invention is different from what is defined in the claim(s) because claims 1, 5 and 13 recite "... a plurality of electrodes, disposed in one of channels of the inkjet cartridge respectively. ...". and Figure 4 of Applicant's Drawings shows only one electrode disposed in each channel.

Art Unit: 2861

Examiner is unsure what Applicant's invention is. For the purpose of the following rejections, the examiner assumes that there is one electrode in each channel.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5, 8, 13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silverbrook (US 6679582 B2) in view of Setoyama (JP 10227466 A).

**Silverbrook teaches the following:**

**\*regarding claims 1, a leakage detection apparatus for a multi-channel inkjet cartridge comprising:**

a plurality of electrodes (*detection electrodes*), a plurality of channels (*inlet channels 48, Fig. 5a*); and a controller (*nozzle fault circuit*) coupled to the electrodes (*Fig. 5b*), to detect leakage between channels (*col. 5: 18-22 shows that ink builds-up in the containment formations 146, which are between the channels 48*)

**\*regarding claim 5, an inkjet dispensing apparatus comprising:**

a cartridge including a plurality of channels (*ink inlet channels 48, Fig. 5a*), wherein reagents are received in the channels (*col. 3: 57-58*);

Art Unit: 2861

a chip disposed on the cartridge (*substrate 16, Fig. 5a*), including a plurality of first through holes (*apertures 84, Fig. 5a*) communicating with one of the channels respectively (*aperture 84 communicates with respective channel 48, Fig. 5a*);

a plurality of electrodes (*col. 5: 20-22*); and

a controller (*nozzle fault circuit, Fig. 5a*), coupled to the electrodes (*Fig. 5b*), to detect leakage between channels (*col. 5: 18-22 shows that ink builds-up in the containment formations 146, which are between the channels 48*)

**\*regarding claim 8**, a barrier layer (*dielectric layer 18, Fig. 1*), disposed on the chip (*layer 18 is disposed on substrate 16, Fig. 1*), including a plurality of second through holes communicating with the first through holes respectively (*Fig. 5a*); and

a nozzle plate disposed on the barrier layer (*nozzle guard 80 disposed on top of layer 18, Fig. 5a*), including a plurality of orifices communicating with the second through holes respectively (*apertures 84, Fig. 5a*)

**\*regarding claim 13**, a leakage detection method comprising:

providing an inkjet cartridge (*not shown*), a plurality of electrodes (*detection electrodes, col. 5: 18-22*), and a controller (*nozzle fault circuit, Fig. 5a*), wherein the inkjet cartridge includes a chip (*substrate 16, Fig. 5a*) and a plurality of channels (*ink inlet channels 48, Fig. 5a*), reagents are received in the channels (*col. 3: 57-58*), and the electrodes are coupled to the controller (*Fig. 5b*);

the controller detecting the leakage between the channels via the electrodes (*col. 5: 18-22 shows that ink builds-up in the containment formations 146, which are between the channels 48*)

**\*regarding claim 16**, the controller providing voltage to one of the electrodes (*Fig. 5b shows that the controller provides a voltage V+ to the electrodes; this is also shown in col. 5: 18-22 in that the electrodes form a circuit*)

Art Unit: 2861

\*detection electrodes for detecting leakage are positioned in the containment formation  
(col. 5: 20-21)

**Silverbrook does not expressly teach the following:**

\*regarding claims 13 and 16, inserting the electrodes to one of the channels of the inkjet cartridge respectively so that each of the electrodes contacts the reagent in the corresponding channel

\*regarding claims 1 and 5, one of the plurality of electrodes is disposed in each of the channels, respectively, the electrodes contacting the reagent in the corresponding channel. At the time of invention, it would have been obvious to a person of ordinary skill in the art to insert the electrodes to one of the channels of the inkjet cartridge respectively for the purpose of immersing the electrode in the conductive liquid, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

**However, Setoyama teaches the following:**

\*regarding claims 1 and 5, one of the plurality of electrodes is disposed in each of the channels, respectively (*Fig. 1 shows one electrode 4 inserted into each piping unit 1*), the electrodes contacting the reagent in the corresponding channel (*electrodes 4 contact the liquid within the piping 1, Fig. 1*)

\*regarding claims 13 and 16, inserting the electrodes (*electrodes 4*) to one of the channels (*piping units 1*) respectively (*Fig. 1*) so that each of the electrodes contacts the reagent in the corresponding channel (*electrodes 4 contact the liquid within the piping 1, Fig. 1*)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Silverbrook's electrode positioning to incorporate one electrode in each of the

Art Unit: 2861

channels. The motivation for doing so, as taught by Setoyama, is so that the electrode can be immersed into the electro-conductive liquid (*abstract: 8-11*).

Claims 4, 12, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silverbrook (US 6679582 B2) in view of Setoyama (JP 10n227466 A), as applied to claim 1 above, and further in view of Monclus et al. (US 6402277 B1).

**Silverbrook modified by Setoyama teaches all claimed limitations except for the following:**

**\*regarding claims 4, 12, and 17, the controller includes a display to display leakage detection results**

**Monclus et al. teach the following:**

**\*regarding claims 4, 12, and 17, the controller includes a display (*front panel*) to display leakage detection results (*col. 6: 58-60*)**

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Silverbrook's controller to include a display. The motivation for doing so, as taught by Monclus et al., is to warn the user to replace the tubes as soon as they break, reducing the risk of damaging the printer (*col. 2: 47-50*).

Claims 6, 7, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silverbrook (US 6679582 B2) in view of Setoyama (JP 10227466 A), as applied to claim 5 above, and further in view of Kanayama et al. (US 5572241).

**Silverbrook teaches the following:**

**\*regarding claims 7 and 15, the chip (*substrate 16, Fig. 5a*) is covered by a layer (*guard 82, Fig. 5a*)**

Art Unit: 2861

**Silverbrook modified by Setoyama does not expressly teach the following:**

**\*regarding claims 6 and 14, the chip is made of glass**

**\*regarding claims 7 and 15, the chip is covered by an electric-isolating layer**

**Kanayama et al. teaches the following:**

**\*regarding claims 6 and 14, the chip is made of glass (*col. 2: 35-38*)**

**\*regarding claims 7 and 15, the layer (*ink pass plate 10, Fig. 1*) is an electric-isolating layer (*col. 2: 35-38*)**

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Silverbrook's chip to be made of glass. The motivation for doing so, as taught by Kanayama et al., is so that the chip will not be electrically conductive (*col. 2: 38*).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Silverbrook (US 6679582 B2) in view of Setoyama (JP 10227466 A), as applied to claim 8 above, and further in view of Harvey (US 5855713).

**Silverbrook modified by Setoyama teaches all claimed limitations except for the following:**

**\*regarding claim 9, the nozzle plate is made of polyimide**

**Harvey teaches the following:**

**\*regarding claim 9, the nozzle plate is made of polyimide (*col. 3: 41-48*)**

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Silverbrook's nozzle plate to be made of polyimide. The motivation for doing so, as taught by Harvey, is that polyimide is chemically resistant abatable polymer (*col. 4: 30-42*).



*Allowable Subject Matter*

Claims 2, 3, 10, and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Response to Arguments*

Applicant's arguments with respect to claims 1, 5, and 13 have been considered but are moot in view of the new ground(s) of rejection. The above rejection, Silverbrook (US 6679582 B2) in view of Setoyama (JP 10227466 A) discloses a plurality of electrodes disposed in one of channels of the inkjet cartridge respectively. Applicant's arguments regarding Silverbrook not teaching that ink leakage would happen between different nozzles because of the function of containment wall 144 is acknowledged; however, Silverbrook does teach that the containment formations 146 include a containment wall 144, and that this formation confines leakage ink so as not to affect the function of surrounding nozzles (*col. 5: 16-18*).

Art Unit: 2861

*Communication with the USPTO*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shelby Fidler whose telephone number is (571) 272-8455. The examiner can normally be reached on MWF 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Shelby Z. Fidler*

SLF

*16 245*  
K. FEGGINS  
PRIMARY EXAMINER

*3/04*